FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Don Bacon
U.S. House of Representatives
1024 Longworth House Office Building
Washington, DC 20515

Dear Congressman Bacon:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

At the outset, I want to stress that protecting the national security and safety of the American people is a critical priority for me. That is why the Commission under my leadership has taken repeated actions to secure the 5G supply chain and to eliminate threats to national security within our networks. That is why I've personally collaborated with the Department of Defense on everything from accommodating their needs in the 3.5 GHz and 37 GHz bands to speaking publicly in support of the Department's nascent 5G experiments. But the FCC has an important job to do with regard to connectivity generally and 5G specifically—we must position ourselves as a global leader in innovation, technology, and the spectrum resources to support these efforts. Our 5G FAST Plan emphasizes the importance of making more spectrum available for commercial use—it is a blueprint for the future—and our staff is constantly working to find more ways to maximize efficient use of spectrum for commercial use. Our work on the L-band is part of this effort.

Of course, we would never take an action that would compromise the safety and security of the American people. That is why the decision adopted by the Commission with respect to the L-band proceeding included strict conditions to ensure that GPS operations continue to be protected from harmful interference. These include a 99% reduction in power for downlink operations. Ligado must establish a 23-megahertz guard band using its own licensed spectrum. It must consult relevant agencies prior to particular deployments and commencement of operations. It must develop a program to repair or replace any potentially affected devices in a manner consistent with the relevant agency's programmatic needs. Furthermore, to address national security concerns raised by the Department of Defense, if the Department determines, based on the base station and technical operating data Ligado is required to make available to it, that Ligado's operations will cause harmful interference to a specific, identified GPS receiver operating on a military installation and that the GPS receiver is incapable of being fully tested or replaced, Ligado must negotiate with the Department to determine an acceptable received power

level over the military installation in question. And finally, the FCC has placed on Ligado the burden of resolving any instance of harmful interference, including through the a "stop buzzer" capability that can cease all transmissions within 15 minutes of receiving a request. While many would argue that these conditions go beyond what is necessary given the evidence in the record, I thought that it was important for the Commission to go the extra mile to ensure that national security would be protected.

Before answering your specific questions, I believe that it is important to address a fundamental misconception that is set forth in your letter and has permeated much of the public discussion about this matter. Although your letter references the shared use of spectrum, the Commission's L-band decision does not authorize *any* spectrum sharing between Ligado and GPS. In fact, spectrum in this band has been licensed to Ligado and predecessor companies for over 30 years—with those companies authorized to deploy terrestrially since 2004. And as mentioned above, one of the FCC's conditions require separation of Ligado's operations from GPS spectrum by means of a 23-megahertz guard band. Thus, any implication that the Commission has authorized Ligado to "share" spectrum that is currently allocated to GPS is incorrect. GPS has no right to operate in the spectrum in question, so there is nothing for Ligado to share.

Moreover, your letter implies that the Department of Defense lacked an opportunity to present to the Commission, and in particular the Commissioners, technical information concerning the Ligado application. This is false. It is indisputable that the Department of Defense was provided with numerous opportunities over nearly a *decade* to provide the Commission with any relevant evidence it wished to submit.

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federal agencies in December 2019, when the Department of Defense informed the Commission that it had additional information that it wanted to submit into the public record, the FCC paused further work on the application until March so that Department would have yet another opportunity to share its views with the Commission. To put all this another way: The Department of Defense had actual possession of the draft that the FCC was poised to adopt—and thus an opportunity to comment on it—for almost *half a year* before the FCC finally adopted it.

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The *Ligado Order* itself—in a section titled "Compliance with Section 343 of the Communications Act"—explains how the Commission's decision is consistent with that requirement (see paragraphs 129–30). Among other things, this explanation notes that the concerns regarding widespread harmful interference with covered GPS devices were "effectively resolved based on the parameters of Ligado's amended modification applications, the test data/analyses presented in the record, and the conditions imposed in this Order and Authorization, which address any identified potential harmful interference concerns before ATC network operations commence." The support for this conclusion is detailed at length throughout the 72-page *Ligado Order*, a copy of which I am including with this letter.

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I appreciate this opportunity to answer your questions related to the Commission's unanimous, bipartisan decision to continue promoting American leadership in 5G and to protect the important services enabled by GPS.

Sincerely,

Ajit V. Pai

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OFFICE OF
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May 26, 2020

The Honorable Rob Bishop
U.S. House of Representatives
123 Cannon House Office Building
Washington, DC 20515

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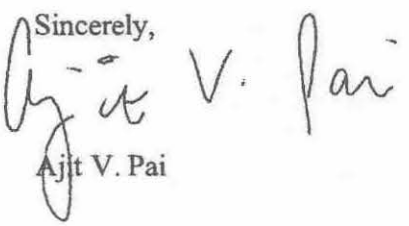
Sincerely,



Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Anthony Brindisi
U.S. House of Representatives
329 Cannon House Office Building
Washington, DC 20515

Dear Congressman Brindisi:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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Sincerely,

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
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May 26, 2020

The Honorable Liz Cheney
U.S. House of Representatives
416 Cannon House Office Building
Washington, DC 20515

Dear Congresswoman Cheney:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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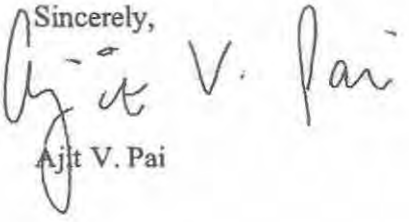
I appreciate this opportunity to answer your questions related to the Commission's unanimous, bipartisan decision to continue promoting American leadership in 5G and to protect the important services enabled by GPS.

Sincerely,



Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Gli Cisneros
U.S. House of Representatives
431 Cannon House Office Building
Washington, DC 20515

Dear Congressman Cisneros:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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Sincerely,

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Michael Conaway
U.S. House of Representatives
2430 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Conaway:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

At the outset, I want to stress that protecting the national security and safety of the American people is a critical priority for me. That is why the Commission under my leadership has taken repeated actions to secure the 5G supply chain and to eliminate threats to national security within our networks. That is why I've personally collaborated with the Department of Defense on everything from accommodating their needs in the 3.5 GHz and 37 GHz bands to speaking publicly in support of the Department's nascent 5G experiments. But the FCC has an important job to do with regard to connectivity generally and 5G specifically—we must position ourselves as a global leader in innovation, technology, and the spectrum resources to support these efforts. Our 5G FAST Plan emphasizes the importance of making more spectrum available for commercial use—it is a blueprint for the future—and our staff is constantly working to find more ways to maximize efficient use of spectrum for commercial use. Our work on the L-band is part of this effort.

Of course, we would never take an action that would compromise the safety and security of the American people. That is why the decision adopted by the Commission with respect to the L-band proceeding included strict conditions to ensure that GPS operations continue to be protected from harmful interference. These include a 99% reduction in power for downlink operations. Ligado must establish a 23-megahertz guard band using its own licensed spectrum. It must consult relevant agencies prior to particular deployments and commencement of operations. It must develop a program to repair or replace any potentially affected devices in a manner consistent with the relevant agency's programmatic needs. Furthermore, to address national security concerns raised by the Department of Defense, if the Department determines, based on the base station and technical operating data Ligado is required to make available to it, that Ligado's operations will cause harmful interference to a specific, identified GPS receiver operating on a military installation and that the GPS receiver is incapable of being fully tested or replaced, Ligado must negotiate with the Department to determine an acceptable received power

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Before answering your specific questions, I believe that it is important to address a fundamental misconception that is set forth in your letter and has permeated much of the public discussion about this matter. Although your letter references the shared use of spectrum, the Commission's L-band decision does not authorize *any* spectrum sharing between Ligado and GPS. In fact, spectrum in this band has been licensed to Ligado and predecessor companies for over 30 years—with those companies authorized to deploy terrestrially since 2004. And as mentioned above, one of the FCC's conditions require separation of Ligado's operations from GPS spectrum by means of a 23-megahertz guard band. Thus, any implication that the Commission has authorized Ligado to "share" spectrum that is currently allocated to GPS is incorrect. GPS has no right to operate in the spectrum in question, so there is nothing for Ligado to share.

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Sincerely,

Ajit V. Pai

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Jim Cooper
Chairman
Committee on Armed Services
Subcommittee on Strategic Forces
U.S. House of Representatives
2340 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Cooper:

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I appreciate this opportunity to answer your questions related to the Commission's unanimous, bipartisan decision to continue promoting American leadership in 5G and to protect the important services enabled by GPS.

Sincerely,

Ajit V. Pai

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Veronica Esobar
U.S. House of Representatives
1505 Cannon House Office Building
Washington, DC 20515

Dear Congresswoman Esobar:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

At the outset, I want to stress that protecting the national security and safety of the American people is a critical priority for me. That is why the Commission under my leadership has taken repeated actions to secure the 5G supply chain and to eliminate threats to national security within our networks. That is why I've personally collaborated with the Department of Defense on everything from accommodating their needs in the 3.5 GHz and 37 GHz bands to speaking publicly in support of the Department's nascent 5G experiments. But the FCC has an important job to do with regard to connectivity generally and 5G specifically—we must position ourselves as a global leader in innovation, technology, and the spectrum resources to support these efforts. Our 5G FAST Plan emphasizes the importance of making more spectrum available for commercial use—it is a blueprint for the future—and our staff is constantly working to find more ways to maximize efficient use of spectrum for commercial use. Our work on the L-band is part of this effort.

Of course, we would never take an action that would compromise the safety and security of the American people. That is why the decision adopted by the Commission with respect to the L-band proceeding included strict conditions to ensure that GPS operations continue to be protected from harmful interference. These include a 99% reduction in power for downlink operations. Ligado must establish a 23-megahertz guard band using its own licensed spectrum. It must consult relevant agencies prior to particular deployments and commencement of operations. It must develop a program to repair or replace any potentially affected devices in a manner consistent with the relevant agency's programmatic needs. Furthermore, to address national security concerns raised by the Department of Defense, if the Department determines, based on the base station and technical operating data Ligado is required to make available to it, that Ligado's operations will cause harmful interference to a specific, identified GPS receiver operating on a military installation and that the GPS receiver is incapable of being fully tested or replaced, Ligado must negotiate with the Department to determine an acceptable received power

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Moreover, your letter implies that the Department of Defense lacked an opportunity to present to the Commission, and in particular the Commissioners, technical information concerning the Ligado application. This is false. It is indisputable that the Department of Defense was provided with numerous opportunities over nearly a *decade* to provide the Commission with any relevant evidence it wished to submit.

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federal agencies in December 2019, when the Department of Defense informed the Commission that it had additional information that it wanted to submit into the public record, the FCC paused further work on the application until March so that Department would have yet another opportunity to share its views with the Commission. To put all this another way: The Department of Defense had actual possession of the draft that the FCC was poised to adopt—and thus an opportunity to comment on it—for almost *half a year* before the FCC finally adopted it.

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Sincerely,

Ajit V. Pai

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable John Garamendi
U.S. House of Representatives
2438 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Garamendi:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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Sincerely,

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Chrissy Houlahan
U.S. House of Representatives
1218 Longworth House Office Building
Washington, DC 20515

Dear Congresswoman Houlahan:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

At the outset, I want to stress that protecting the national security and safety of the American people is a critical priority for me. That is why the Commission under my leadership has taken repeated actions to secure the 5G supply chain and to eliminate threats to national security within our networks. That is why I've personally collaborated with the Department of Defense on everything from accommodating their needs in the 3.5 GHz and 37 GHz bands to speaking publicly in support of the Department's nascent 5G experiments. But the FCC has an important job to do with regard to connectivity generally and 5G specifically—we must position ourselves as a global leader in innovation, technology, and the spectrum resources to support these efforts. Our 5G FAST Plan emphasizes the importance of making more spectrum available for commercial use—it is a blueprint for the future—and our staff is constantly working to find more ways to maximize efficient use of spectrum for commercial use. Our work on the L-band is part of this effort.

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Before answering your specific questions, I believe that it is important to address a fundamental misconception that is set forth in your letter and has permeated much of the public discussion about this matter. Although your letter references the shared use of spectrum, the Commission's L-band decision does not authorize *any* spectrum sharing between Ligado and GPS. In fact, spectrum in this band has been licensed to Ligado and predecessor companies for over 30 years—with those companies authorized to deploy terrestrially since 2004. And as mentioned above, one of the FCC's conditions require separation of Ligado's operations from GPS spectrum by means of a 23-megahertz guard band. Thus, any implication that the Commission has authorized Ligado to "share" spectrum that is currently allocated to GPS is incorrect. GPS has no right to operate in the spectrum in question, so there is nothing for Ligado to share.

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Sincerely,

Ajit V. Pai

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Doug Lamborn
U.S. House of Representatives
2402 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Lamborn:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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I appreciate this opportunity to answer your questions related to the Commission's unanimous, bipartisan decision to continue promoting American leadership in 5G and to protect the important services enabled by GPS.

Sincerely,

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Jim Langevin
U.S. House of Representatives
2077 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Langevin:

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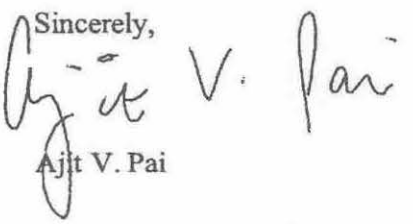

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Rick Larsen
U.S. House of Representatives
2113 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Larsen:

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Sincerely,

Ajit V. Pai

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Elaine Luria
U.S. House of Representatives
534 Cannon House Office Building
Washington, DC 20515

Dear Congresswoman Luria:

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Sincerely,

Ajit V. Pai

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Paul Mitchell
U.S. House of Representatives
211 Cannon House Office Building
Washington, DC 20515

Dear Congressman Mitchell:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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Of course, we would never take an action that would compromise the safety and security of the American people. That is why the decision adopted by the Commission with respect to the L-band proceeding included strict conditions to ensure that GPS operations continue to be protected from harmful interference. These include a 99% reduction in power for downlink operations. Ligado must establish a 23-megahertz guard band using its own licensed spectrum. It must consult relevant agencies prior to particular deployments and commencement of operations. It must develop a program to repair or replace any potentially affected devices in a manner consistent with the relevant agency's programmatic needs. Furthermore, to address national security concerns raised by the Department of Defense, if the Department determines, based on the base station and technical operating data Ligado is required to make available to it, that Ligado's operations will cause harmful interference to a specific, identified GPS receiver operating on a military installation and that the GPS receiver is incapable of being fully tested or replaced, Ligado must negotiate with the Department to determine an acceptable received power

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Sincerely,

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Seth W. Moulton
U.S. House of Representatives
1127 Longworth House Office Building
Washington, DC 20515

Dear Congressman Moulton:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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Sincerely,

Ajit V. Pai

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Donald Norcross
U.S. House of Representatives
1531 Longworth House Office Building
Washington, DC 20515

Dear Congressman Norcross:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Mike D. Rogers
U.S. House of Representatives
2184 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Rogers:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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Sincerely,

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Adam Smith
Chairman
Committee on Armed Services
U.S. House of Representatives
2216 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Smith:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

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I appreciate this opportunity to answer your questions related to the Commission's unanimous, bipartisan decision to continue promoting American leadership in 5G and to protect the important services enabled by GPS.

Sincerely,

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Elise Stefanik
U.S. House of Representatives
318 Cannon House Office Building
Washington, DC 20515

Dear Congresswoman Stefanik:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

At the outset, I want to stress that protecting the national security and safety of the American people is a critical priority for me. That is why the Commission under my leadership has taken repeated actions to secure the 5G supply chain and to eliminate threats to national security within our networks. That is why I've personally collaborated with the Department of Defense on everything from accommodating their needs in the 3.5 GHz and 37 GHz bands to speaking publicly in support of the Department's nascent 5G experiments. But the FCC has an important job to do with regard to connectivity generally and 5G specifically—we must position ourselves as a global leader in innovation, technology, and the spectrum resources to support these efforts. Our 5G FAST Plan emphasizes the importance of making more spectrum available for commercial use—it is a blueprint for the future—and our staff is constantly working to find more ways to maximize efficient use of spectrum for commercial use. Our work on the L-band is part of this effort.

Of course, we would never take an action that would compromise the safety and security of the American people. That is why the decision adopted by the Commission with respect to the L-band proceeding included strict conditions to ensure that GPS operations continue to be protected from harmful interference. These include a 99% reduction in power for downlink operations. Ligado must establish a 23-megahertz guard band using its own licensed spectrum. It must consult relevant agencies prior to particular deployments and commencement of operations. It must develop a program to repair or replace any potentially affected devices in a manner consistent with the relevant agency's programmatic needs. Furthermore, to address national security concerns raised by the Department of Defense, if the Department determines, based on the base station and technical operating data Ligado is required to make available to it, that Ligado's operations will cause harmful interference to a specific, identified GPS receiver operating on a military installation and that the GPS receiver is incapable of being fully tested or replaced, Ligado must negotiate with the Department to determine an acceptable received power

level over the military installation in question. And finally, the FCC has placed on Ligado the burden of resolving any instance of harmful interference, including through the a "stop buzzer" capability that can cease all transmissions within 15 minutes of receiving a request. While many would argue that these conditions go beyond what is necessary given the evidence in the record, I thought that it was important for the Commission to go the extra mile to ensure that national security would be protected.

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Sincerely,

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Mac Thornberry
Ranking Member
Committee on Armed Services
U.S. House of Representatives
2216 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Thornberry:

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I appreciate this opportunity to answer your questions related to the Commission's unanimous, bipartisan decision to continue promoting American leadership in 5G and to protect the important services enabled by GPS.

Sincerely,

Ajit V. Pai

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Lori Trahan
U.S. House of Representatives
1616 Longworth House Office Building
Washington, DC 20515

Dear Congresswoman Trahan:

Thank you for your letter regarding the Commission's unanimous, bipartisan decision to approve with stringent conditions Ligado's application to deploy a low-power terrestrial network in L-band spectrum. I also want to express my appreciation for your Committee's decision to set up a joint briefing on May 21 with staff from the FCC and the Department of Defense. The briefing allowed us to address the members of your Committee directly, and I welcome this opportunity to further address the concerns raised in your letter.

At the outset, I want to stress that protecting the national security and safety of the American people is a critical priority for me. That is why the Commission under my leadership has taken repeated actions to secure the 5G supply chain and to eliminate threats to national security within our networks. That is why I've personally collaborated with the Department of Defense on everything from accommodating their needs in the 3.5 GHz and 37 GHz bands to speaking publicly in support of the Department's nascent 5G experiments. But the FCC has an important job to do with regard to connectivity generally and 5G specifically—we must position ourselves as a global leader in innovation, technology, and the spectrum resources to support these efforts. Our 5G FAST Plan emphasizes the importance of making more spectrum available for commercial use—it is a blueprint for the future—and our staff is constantly working to find more ways to maximize efficient use of spectrum for commercial use. Our work on the L-band is part of this effort.

Of course, we would never take an action that would compromise the safety and security of the American people. That is why the decision adopted by the Commission with respect to the L-band proceeding included strict conditions to ensure that GPS operations continue to be protected from harmful interference. These include a 99% reduction in power for downlink operations. Ligado must establish a 23-megahertz guard band using its own licensed spectrum. It must consult relevant agencies prior to particular deployments and commencement of operations. It must develop a program to repair or replace any potentially affected devices in a manner consistent with the relevant agency's programmatic needs. Furthermore, to address national security concerns raised by the Department of Defense, if the Department determines, based on the base station and technical operating data Ligado is required to make available to it, that Ligado's operations will cause harmful interference to a specific, identified GPS receiver operating on a military installation and that the GPS receiver is incapable of being fully tested or replaced, Ligado must negotiate with the Department to determine an acceptable received power

level over the military installation in question. And finally, the FCC has placed on Ligado the burden of resolving any instance of harmful interference, including through the a "stop buzzer" capability that can cease all transmissions within 15 minutes of receiving a request. While many would argue that these conditions go beyond what is necessary given the evidence in the record, I thought that it was important for the Commission to go the extra mile to ensure that national security would be protected.

Before answering your specific questions, I believe that it is important to address a fundamental misconception that is set forth in your letter and has permeated much of the public discussion about this matter. Although your letter references the shared use of spectrum, the Commission's L-band decision does not authorize *any* spectrum sharing between Ligado and GPS. In fact, spectrum in this band has been licensed to Ligado and predecessor companies for over 30 years—with those companies authorized to deploy terrestrially since 2004. And as mentioned above, one of the FCC's conditions require separation of Ligado's operations from GPS spectrum by means of a 23-megahertz guard band. Thus, any implication that the Commission has authorized Ligado to "share" spectrum that is currently allocated to GPS is incorrect. GPS has no right to operate in the spectrum in question, so there is nothing for Ligado to share.

Moreover, your letter implies that the Department of Defense lacked an opportunity to present to the Commission, and in particular the Commissioners, technical information concerning the Ligado application. This is false. It is indisputable that the Department of Defense was provided with numerous opportunities over nearly a *decade* to provide the Commission with any relevant evidence it wished to submit.

Like other administrative agencies, the FCC makes its decisions based on the record before it. As such, the Commission maintained an open and transparent process in considering Ligado's proposed terrestrial network. In 2011, the Commission created a Technical Working Group to address concerns raised by federal agencies, including the Department of Defense, about the alleged impacts on GPS of Ligado's proposed network. Over the next two years, the Commission then sought comment *four separate times* on issues related to Ligado's proposal. After Ligado submitted revised license modification applications in December 2015, the Commission yet again sought comment through an April 2016 Public Notice. When Ligado amended those applications in May 2018, the Commission yet again issued a Public Notice seeking comment in June 2018. In response to each of these notices, federal agencies like the Department of Defense were free to submit to the Commission any information they believed necessary and appropriate.

But that is not all. In October 2019, the Commission sent a draft decision proposing to grant Ligado's application to the National Telecommunications and Information Administration for coordination through the Interdepartment Radio Advisory Committee (which includes the Department of Defense). The Department of Defense and other federal agencies then had a chance to provide feedback on that draft decision. In the typical situation, there is a three-week period for that feedback to be provided. But in order to give the Department of Defense and other agencies more time to formulate comments on the FCC's draft decision, the Commission agreed to extend that three-week period for an additional month. And after receiving input from

federal agencies in December 2019, when the Department of Defense informed the Commission that it had additional information that it wanted to submit into the public record, the FCC paused further work on the application until March so that Department would have yet another opportunity to share its views with the Commission. To put all this another way: The Department of Defense had actual possession of the draft that the FCC was poised to adopt—and thus an opportunity to comment on it—for almost *half a year* before the FCC finally adopted it.

Moreover, prior to the Commission's decision in this matter, I personally spoke with Secretary of Defense Mark Esper, Under Secretary of Defense for Research and Engineering Michael Griffin, and Deputy Under Secretary of Defense for Research and Engineering Lisa Porter to ensure that the Department had every possible opportunity to make its case to the Commission.

The bottom line is this: The fact that another agency does not like the end result in this proceeding says nothing whatsoever about the process the FCC followed—a process that was both completely consistent with the Administrative Procedure Act and far, far more generous (not to mention far, far more delayed; I recently observed my eighth anniversary at the Commission, and when I started, this matter even then had been pending for years) than in any other proceeding of which I am aware. And it certainly does not diminish the soundness of the technical analysis in the *Ligado Order*, which was the result of the years of work by the FCC's excellent career staff's evaluating test results, compiling information in the record, and ultimately writing a thorough order for the Commission's consideration.

I now turn to your specific questions.

With respect to your first question, section 1698 of the National Defense Authorization Act for Fiscal Year 2017, codified at section 343 of the Communications Act, states that the Commission shall not permit commercial terrestrial operations in the 1525–1559 MHz or 1626.5-1660.5 MHz bands until 90 days after the Commission "resolves concerns of widespread harmful interference by such operations" in those bands "to covered GPS devices."

The *Ligado Order* itself—in a section titled "Compliance with Section 343 of the Communications Act"—explains how the Commission's decision is consistent with that requirement (see paragraphs 129–30). Among other things, this explanation notes that the concerns regarding widespread harmful interference with covered GPS devices were "effectively resolved based on the parameters of Ligado's amended modification applications, the test data/analyses presented in the record, and the conditions imposed in this Order and Authorization, which address any identified potential harmful interference concerns before ATC network operations commence." The support for this conclusion is detailed at length throughout the 72-page *Ligado Order*, a copy of which I am including with this letter.

With respect to your second question, you ask whether the Department of Defense briefed Commissioners on the classified test data contained in the classified report of Department of Defense testing to accompany the Department of Transportation Adjacent Band Compatibility Assessment from April 2018. I cannot speak for my fellow Commissioners, but despite my repeated communications with Department of Defense officials, including in facilities in which the sharing of or discussion about classified information was permitted, none ever offered me

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Sincerely,

Ajit V. Pai

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

May 26, 2020

The Honorable Michael R. Turner
Ranking Member
Committee on Armed Services
Subcommittee on Strategic Forces
U.S. House of Representatives
2340 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Turner:

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